

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of direct memory access control, comprising:
receiving a command to initiate data transfer between a first device and a second device;
responsive to the command received, determining a channel capable of facilitating the
data transfer;
determining a mode indicating a manner in which to activate the channel; ~~and~~
responsive to the data transfer comprising data transfer of a plurality of data segments,
determining a segment count indicator and a segment spacing indicator from
operational characteristics associated with the data transfer; and
enabling the data transfer to be performed using the channel and based on the mode
determined.
2. (Original) The method according to Claim 1, wherein the one of the first device
and the second device comprises a memory device.
3. (Original) The method according to Claim 1, further comprising:
receiving a signal indicating a last transfer associated with the data transfer; and
in response, transmitting a signal acknowledging completion of the data transfer.
4. (Original) The method according to Claim 1, wherein determining a mode
indicating a manner in which to activate the channel comprises:
selecting the mode from one of a group of operation modes comprising a fixed length
single burst mode, a chaining mode, an auto-rollback mode, virtual channel mode,
and a multiple-segment mode.
5. (Original) The method according to Claim 1, wherein determining a mode
indicating a manner in which to activate the channel comprises:
selecting the mode from one of a group of access modes comprising READ and WRITE
modes.
6. (Original) The method according to Claim 1, further comprising:

determining a base address representing a starting address of the data transfer.

7. (Original) The method according to Claim 6, further comprising:
selecting a starting address of a subsequent data transfer to be the base address.

8. (Original) The method according to Claim 6, further comprising:
selecting a starting address of a subsequent data transfer to be an address that is
continuous with an ending address of a previous data transfer.

9. (Original) The method according to Claim 6, further comprising:
determining an ending address contiguous to the starting address; and
automatically rolling the ending address to the starting address when the data transfer
exceeds the ending address.

10. (Cancelled)

11. (Currently amended) The method according to Claim ~~10~~1, further comprising:
determining a base address representing a starting address of a first data segment;
selecting a starting address of a subsequent data segment to be an address determined
from the base address offset based on the segment count indicator and the segment
spacing indicator.

12 (Currently amended) A method of selectably enabling a plurality of data transfer
modes along one or more channels, comprising:

loading predetermined configuration data from an external device, the predetermined
configuration data including the plurality of data transfer modes and the channels
facilitating the data transfer, the plurality of data transfer modes including a
multiple-segment mode for transferring a plurality of data segments;

receiving a command to initiate the data transfer between a source device and a
destination device;

responsive to the command received, selecting a corresponding channel from the
channels and a corresponding mode from the plurality of data transfer modes; and

responsive to the selected data transfer mode being the multiple-segment mode,
determining a segment count indicator and a segment spacing indicator from
operational characteristics associated with the data transfer; and
enabling data transfer between the source device and the destination device based on the
corresponding channel and the corresponding mode.

13. (Original) The method according to Claim 12, wherein selecting a corresponding mode from the plurality of data transfer modes comprises:

selecting the corresponding mode to be one from a group of operation modes comprising
a fixed length single burst mode, a chaining mode, an auto-rollback mode, virtual
channel mode, and a multiple-segment mode.

14. (Original) The method according to Claim 12, wherein selecting a corresponding mode from the plurality of data transfer modes comprises:

selecting the corresponding mode to be one from a group of access modes comprising
READ and WRITE modes.

15. (Original) The method according to Claim 12, wherein one of the source device
and the destination device comprises a memory device.

16. (Original) The method according to Claim 12, wherein enabling data transfer
between the source device and the destination device based on the corresponding channel and the
corresponding mode comprises:

enabling the source device to read data from the destination device.

17. (Original) The method according to Claim 12, wherein enabling data transfer
between the source device and the destination device based on the corresponding channel and the
corresponding mode comprises:

enabling the source device to write data to the destination device.

18. (Currently amended) A method of controlling data transfer between a first device
and a second device, comprising:

receiving a command to initiate the data transfer;
extracting configuration data from the command to load a configuration engine and to
index operational characteristics associated with the data transfer, the
configuration engine being capable of storing the operational characteristics;
selecting from the operational characteristics a channel facilitating the data transfer
between the first device and the second device, and an operation mode associated
with the data transfer;

responsive to the data transfer comprising data transfer of a plurality of data segments,
determining a segment count indicator and a segment spacing indicator from the
operational characteristics;

receiving at least one signal indicating that the data transfer is ready to be undertaken; and
enabling activation of the channel; and
enabling the data transfer using the operation mode selected.

19. (Original) The method according to Claim 18, further comprising:

receiving a signal indicating a last transfer associated with the data transfer; and
in response, transmitting a signal acknowledging completion of the data transfer.

20. (Original) The method according to Claim 18, wherein the second device is
memory device.

21. (Original) The method according to Claim 20, wherein receiving at least one
signal indicating that the data transfer is ready to be undertaken comprises:

receiving a request from the first device to READ data from the memory device.

22. (Original) The method according to Claim 20, wherein receiving at least one
signal indicating that the data transfer is ready to be undertaken comprises:

receiving a request from the first device to WRITE data to the memory device.

23. (Original) The method according to Claim 18, further comprising:

determining a base address representing a starting address of the data transfer.

24. (Original) The method according to Claim 23, wherein enabling the data transfer using the operation mode selected comprises:

selecting a starting address of a subsequent data transfer to be the base address.

25. (Original) The method according to Claim 23, wherein enabling the data transfer using the operation mode selected comprises:

selecting a starting address of a subsequent data transfer to be an address that is continuous with an ending address of a previous data transfer.

26. (Original) The method according to Claim 23, wherein enabling the data transfer using the operation mode selected comprises:

determining an ending address contiguous to the starting address; and
automatically rolling the ending address to the starting address when the data transfer exceeds the ending address.

27. (Cancelled)

28. (Currently amended) The method according to Claim ~~27~~18, wherein enabling the data transfer using the operation mode selected comprises:

determining a base address representing a starting address of a first data segment;
selecting a starting address of a subsequent data segment to be an address determined from the base address offset based on the segment count indicator and the segment spacing indicator.

29. (Original) The method according to Claim 18, wherein receiving at least one signal indicating that the data transfer is ready to be undertaken comprises:

receiving a request from the first device to READ data from the second device; and
receiving a request from the second device to WRITE data to the first device.

30. (Original) The method according to Claim 29, wherein the operation mode comprises a virtual channel data transfer mode, and wherein enabling the data transfer using the operation mode selected comprises:

sending an acknowledge signal to each of the first device and the second device; and enabling the data transfer to be performed directly between the first device and the second device.

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Currently amended) A computer program product for controlling data transfer between a first device and a second device, the computer program product stored on a computer readable medium, and adapted to perform operations of:

allowing receipt of a command to initiate the data transfer;

allowing configuration data to be extracted from the command to load a configuration engine and to index operational characteristics associated with the data transfer, the configuration engine being capable of storing the operational characteristics; enabling selection from the operational characteristics of a channel facilitating the data transfer between the first device and the second device, and an operation mode associated with the data transfer;

responsive to the data transfer comprising data transfer of a plurality of data segments,

determining a segment count indicator and a segment spacing indicator from the operational characteristics;

allowing receipt of at least one signal indicating that the data transfer is ready to be undertaken; ~~and~~

enabling activation of the channel; and

enabling the data transfer using the operation mode selected.

36. (Currently amended) A computer program product for selectably enabling a plurality of data transfer modes along one or more channels, the computer program product stored on a computer readable medium, and adapted to perform operations of:

allowing predetermined configuration data to be loaded from an external device, the
predetermined configuration data including the plurality of data transfer modes
and the channels facilitating the data transfer, the plurality of data transfer modes
including a multiple-segment mode for transferring a plurality of data segments;
enabling receipt of a command to initiate the data transfer between a source device and a
destination device;
responsive to the command received, enabling selection of a corresponding channel from
the channels and a corresponding mode from the plurality of data transfer modes;
and
responsive to the selected data transfer mode being the multiple-segment mode,
determining a segment count indicator and a segment spacing indicator from
operational characteristics associated with the data transfer; and
enabling data transfer between the source device and the destination device based on the
corresponding channel and the corresponding mode.

37. (Currently amended) A computer program product for direct memory access
control, the computer program product stored on a computer readable medium, and adapted to
perform operations of:

allowing receipt of a command to initiate data transfer between a first device and a
second device;
responsive to the command received, enabling determination to be made of a channel
capable of facilitating the data transfer;
enabling determination of a mode indicating a manner in which to activate the channel;
and
responsive to the data transfer comprising data transfer of a plurality of data segments,
determining a segment count indicator and a segment spacing indicator from
operational characteristics associated with the data transfer; and
enabling the data transfer to be performed using the channel and based on the mode
determined.

38. (Currently amended) A method of controlling data transfer between a first device and a second device, comprising:

- allowing receipt of a command to initiate the data transfer;
- enabling configuration data to be extracted from the command to load a configuration engine and to index operational characteristics associated with the data transfer, the configuration engine being capable of storing the operational characteristics;
- allowing a channel to be selected from the operational characteristics, the channel facilitating the data transfer between the first device and the second device, and an operation mode associated with the data transfer;
- responsive to the data transfer comprising data transfer of a plurality of data segments,
- determining a segment count indicator and a segment spacing indicator from the operational characteristics;
- allowing receipt of at least one signal indicating that the data transfer is ready to be undertaken; and
- enabling activation of the channel; and
- enabling the data transfer using the operation mode selected.

39. (Original) The method according to Claim 38, further comprising:

- allowing receipt of a signal indicating a last transfer associated with the data transfer; and
- in response, enabling transmission of a signal acknowledging completion of the data transfer.

40. (New) A method for selectably enabling multiple data transfer modes between devices and storage elements in a video processing system, comprising:

- initiating a data transfer between components of the video processing system;
- selecting a channel capable of facilitating the data transfer;
- selecting an operation mode in which the channel will operate, wherein available operation modes include a multi-segment operation mode for transferring non-contiguous blocks of data; and
- enabling the data transfer to be performed at one or more transfer rates using the selected channel and operation mode.

41. (New) The method of claim 40, wherein available operation modes further include at least one of a fixed length single burst mode where each data transfer begins at a common address and lasts for a common length, and a chaining mode where each subsequent data transfer is initiated from the end of a present data transfer so as to form a chain of data transfers.

42. (New) The method of claim 40, wherein available operation modes further include an auto-rollback mode where upper and lower boundary addresses are provided so that when a next data transfer address reaches the upper boundary address, a current address indicator automatically rolls back to the lower boundary address.

43. (New) The method of claim 40, wherein responsive to the multi-segment operation mode being selected, the method further includes transferring a block of a video frame.

44. (New) The method of claim 40, further comprising:
determining a segment count indicator and a segment spacing indicator from operational characteristics associated with the data transfer.

45. (New) The method according to Claim 40, further comprising:
determining a base address representing a starting address of a first data segment;
selecting a starting address of a subsequent data segment to be an address determined from the base address offset based on a segment count indicator and a segment spacing indicator.